

In adult specimens of *Geochelone travancorica* these areas frequently possess a pinkish colour which is intensified during the breeding season. In breeding males these colours change to a fairly bright red, contrasting strongly with the remaining light yellow-brown of the remainder of the head.

Head movements during courtship in this species are believed to be unimportant in species identification. The change in colour is thus presumed to be caused by increased vascularization in the area of organs known to be important in sex and/or species recognition, i.e. the olfactory and visual organs. This vascularization may occur in other species of tortoises as well, but is so evident in *G. travancorica* because of the generally lightly-pigmented head.

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9. DESCRIPTION OF A NEW SPECIES OF TOAD (ANURA : BUFONIDAE) FROM SATARA DISTRICT, MAHARASHTRA, INDIA¹

(With two plates)

In early 1962 arrangements were made, with the co-operation of the Chief Engineer, Koyna Dam Project, Koyna, Satara District, Maharashtra, for the Society's personnel to visit the project area and collect reptiles and amphibians that might be flooded out when the water level rose during the monsoon. On information being received in July that the water level of the dam was rising, two assistants of the Society, P. W. Soman and P. B. Shekar, were sent to the dam area and while collecting on the crest of a hill, covered with vegetation and occasional pools, near Humbelevi village saw several small toads, some in amplexus. They had not in their experience seen breeding toads of such small size and a series was collected. On a subsequent visit on 1st September the toads were found in similar numbers among the grass and under stones in the same area; a large number of juveniles were also noted.

Examination of a series of these toads shows that they are distinct from the species of *Bufo* hitherto described.

¹ Manuscript posted from London 28th November 1963; received in the Society's Office 2nd December 1963.—Eds.

Bufo sulphureus sp. nov.



1. Dorsal view of head of holotype $\times 5$



2. Section of dorsolateral skin immediately behind parotoids $\times 14$

Bufo sulphureus sp. nov.



Ventral view of holotype × 4

Bufo sulphureus sp. nov.

Material examined. Holotype an adult ♀, Reg. No. 377 in the collections of the Bombay Natural History Society, collected at approximately 4000 ft. near Humbelevi village, Koyna, Satara District, Maharashtra. Paratypes: 5 ♂♂, 11 ♀♀, 10 juveniles from the same locality. These specimens will be deposited in the collections of the British Museum (Natural History), the Indian Museum, and the Bombay Natural History Society.

Diagnosis. A small-sized species of *Bufo* (mature individuals less than 34 mm. in body length) without cephalic ridges; tympanum inconspicuous, in diameter less than one-quarter that of the eye; parotoids subtriangular, indistinct; fingers without web; toes long and slender with a rudiment of web; subarticular tubercles single, not prominent; no tarsal ridge. Body covered with small, round, melanin-tipped warts which are irregularly scattered on an otherwise smooth dorsum. In life dark brown with yellow patches on the flanks, thighs, and shoulders.

Description of Holotype. Size small (29.4 mm. snout to vent), cranial crests absent; snout short, only slightly rounded in profile, deeply concave above; canthus rostralis marked off by a prominent, almost straight ridge formed of a single row of rounded tubercles which continues round the anterior border of the eye; loreal region strongly sloping, lips flaring out below; nostrils lateral and swollen, twice as near to the tip of the snout as to the eyes; interorbital width subequal to the upper eyelid, which has a thickened rim bearing tubercles. Tympanic annulus not very distinct, in diameter about one-fifth that of the eye; the tympanic area strongly tuberculate, the tubercles masking the tympanum. Parotoid glands inconspicuous, subtriangular, the posterior ends decidedly narrower than the anterior ones. Fingers free, not dilated, first finger slightly longer than second; subarticular tubercles single but feebly developed. Toes not fringed and with only a rudiment of web at basal phalanges; subarticular tubercles single, barely visible; two metatarsal tubercles, the inner one larger and more prominent; no tarsal ridge. Tarsometatarsal articulation reaches to the tympanum. Dorsal skin set with low, rounded, melanin-tipped, irregularly scattered tubercles of unequal size which are well separated by areas of smooth skin. Lips smooth. Tubercles on limbs closer set, more conical and showing a tendency towards spinosity. Ventral surfaces granular.

Colour. Dorsal surfaces uniform dark brown, exceptionally with slight suffusion of dull chrome-yellow. Bright chrome-yellow patches

on the flanks, sides of thighs, and above the arm insertions. Lips and ventral surfaces cream; occasionally small, irregularly shaped, dark brown spots and blotches on the throat and abdomen. Tubercles on the under surface of limbs, around the vent, and on the infra-tympanic area whitish in some specimens.

Secondary Sex Characters. The males vary in the degree to which their sex characters have developed. All bear nuptial asperities consisting of clusters of dark brown spinules but only in the most sexually advanced example do they cover the latero-dorsal surface of the first and second fingers as well as the inner lateral aspect of the third finger. Similar spinules are present on the inner palmar tubercle. A median subgular vocal sac which communicates with the mouth by means of a wide slit (on the right side in four examples, on the left side in one) is also present. In three of the specimens the posterior half of the sac has a broad, heavily pigmented, transverse band.

Variation. The webbing in the holotype is more reduced than in some other, better preserved specimens in the type series, which have $2\frac{1}{2}$ phalanges free from web on the external side of the 3rd toe and $3\frac{1}{2}$ - $3\frac{3}{4}$ free on both sides of the 4th toe.

Remarks. This species most closely resembles *Bufo brevirostris* Rao (type locality Hassan District, Mysore State) but can be distinguished by its smaller tympanum, concave head, and differing integument. The upper surface of the skin of *brevirostris* is said to be covered with small, uniformly distributed tubercles, with a small row of larger warts on the median line of the back, and the throat and abdomen are described as having spiny tubercles. In *sulphureus* the dorsal tubercles are irregularly scattered and there is no spinosity of the venter.

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REFERENCE

- RAO, C. R. N. (1937): On some new forms of batrachia from S. India. *Proc. Indian Acad. Sci.* 6B (6): 387-427.